

The Well-Designed Global R&D Network

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A new study by Booz Allen Hamilton and INSEAD finds that organizations benefit when they configure their innovation networks for cost and manage them for value.

by Thomas Goldbrunner, Yves Doz, Keeley Wilson, and Steven Veldhoen

Consider the two faces of the global innovation movement. Company A, having grown through acquisition, produces multiple brands for multiple markets and operates a worldwide network of research and product development centers. Each of its R&D sites was initially responsible for its own brands and local market, but with globalization these distinctions have lost their importance.

Company B, on the other hand, was built largely through internal growth and has two global brands. It operates one primary R&D center supported by a handful of special-purpose sites around the world. This comparatively sparse network has helped Company B win wide admiration for the efficiency of its engineering.

Because expanding the number of nodes in a network exponentially increases its complexity, it is not surprising that Company A's R&D structure is more expensive to oper-

ate. Company A has considered closing some sites, but has resisted doing so because it fears losing capabilities and insights, and roiling local markets. Meanwhile, incremental budget cuts have chipped away at engineer and supplier morale. Having built its network to maximize the value associated with market access, it is now forced to manage the network for cost.

Most global innovation networks look like Company A's — and suffer the same problems. Company B's R&D structure is clearly more productive, but it is not necessarily ideal either. Its network might be too compact, limiting access to knowledge that could maximize performance. Thus, to identify principles and practices for creating a truly well-designed innovation network, Booz Allen Hamilton and INSEAD, the international business school, surveyed R&D leaders in 186 companies from 17 industry sectors in 19

nations in 2005. The survey results, and our own experience, suggest one central truth: Organizations benefit when they configure their innovation networks for cost and manage them for value. (For an in-depth look at the survey results, see www.strategy-business.com/media/file/global_innovation.pdf.)

The survey respondents, who together account for nearly 20 percent of global corporate R&D expenditures, or \$76 billion, clearly understand the problems that arise in overseeing a bloated, competitively disadvantaged innovation network. They named what they view as the primary R&D challenges: assessing the value of new knowledge, encouraging cross-site and cross-functional collaboration, managing the complexity of global projects, and optimizing innovation footprints. They also emphasized that having a well-managed R&D network is becoming particularly advantageous as companies expand R&D beyond their

home turf. Between 1975 and 2005, the survey found, the share of R&D sites located outside the markets of their corporate headquarters has risen from 45 percent to 66 percent. That share is likely to increase, with 77 percent of the R&D sites planned over the next three years slated for China or India.

Several factors have contributed to the dispersion of corporate R&D sites. Rising costs in the West, rapid growth of markets in developing nations, advanced information technology, a scarcity of engineers and scientists, and the opening of markets in China and India have each encouraged companies to globalize their R&D efforts. Our survey suggests that future R&D sites in Western Europe, the United States, and Japan will be selected primarily because they offer value such as proximity to technology or research clusters, to markets or customers, or to qualified workers commensurate with their higher cost. Locations in the developing world will be chosen primarily to gain access to local markets, to decrease costs, and, particularly in India and Eastern Europe, to tap into a pool of highly qualified workers.

But choosing the right location isn't an easy task for R&D leaders. Because it's critical that leaders be able to justify the high cost of knowledge access in a developed market location and of operational efficiency in a developing market location, the process must be managed strategically. Without fully understanding the calculated benefits of a potential site, R&D executives are likely to incur an unjustified increase in structural costs.

When the process is managed properly, however, the benefits are

easily identifiable. A diverse class of multinational corporations, including LG, Adidas, Novartis, and Toyota, have all taken advantage of globalization. Korean giant LG was able to move part of its software and project engineering to India, whereas apparel manufacturer Adidas created a key consumer and fashion product development center in Japan.

A global footprint also enables companies to better tailor their products for local markets. There are countless examples: Novartis moved its research on tropical diseases to Singapore, while high-tech giants like Areva have more than 1,000 engineers working in China and India to develop products for the local markets. And even Toyota, long the pinnacle of centralized learning and development based solely in Nagoya, Japan, is now starting to establish engineering centers in Thailand and Brussels.

In the face of such obvious need to disperse innovation networks despite the risks, how can companies ensure that they configure their new networks for cost? First, they can accept that there are only two valid reasons to add a node: 1) to cost-effectively access critical knowledge that could not otherwise be tapped, and 2) to locate capabilities where they can deliver results better, faster, and cheaper than anywhere else in the network. Compared with traditional innovation networks, these leaner, more consciously designed networks can achieve 37 percent faster time-to-market and lower costs by 24 percent, according to estimates based on the aggregate experience of survey participants. This statistic suggests that when possible, companies should be frugal while expanding and as objective

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as possible when assessing their innovation networks. If knowledge or capabilities can be found in a less costly manner, they should be. Just as inefficiencies are not tolerated in manufacturing supply chains, they should also be stripped out of innovation networks.

In addition, there is a morale benefit when each R&D site has clear responsibilities and stimulating work to do. Moving more substantive work to a site or giving that site more challenging assignments signals a commitment to the country, the site, and the employees. With respondents reporting that 23 percent of their overseas sites do nothing but local market customization, a real potential to enhance retention and results exists.

Another critical factor when creating a geographically diverse R&D network is to ensure that well-planned processes and tools are in place that can help foster innovation and collaboration across geographies, cultures, and organizational silos. Innovation based on disparate knowledge gleaned globally can deliver real competitive advantage, but with the diversity comes complexity and cost. The “technology innovators” in our survey — those who seek to be first to market and to introduce breakthrough technologies — use a number of hard and soft levers to ensure that their global networks deliver maximum value.

The hard levers are both technical and organizational. On the technical side, they include common product and component architectures as communication platforms that give global teams a shared language to foster collaboration. For example, component reviews should be conducted the same way regard-

less of the location. On the organizational side, globally aligned processes, roles, and structures are seen as important; also viewed as vital are cross-location steering committees to manage pipelines and portfolios, and information systems that enable 24/7 flows of knowledge, ideas, and designs. Although it may be difficult to impose exactly the same organizational structure on a 50-person team in Thailand and a 15,000-person development organization in Japan, technology innovators believe that some measure of standardization is important.

The soft levers are geared toward evoking and sustaining a healthy innovation culture and attracting and developing talent. They can seem like luxuries in a world where every minute counts and every dime spent is questioned, but our experience suggests they make a critical difference to performance. Our respondents generally agreed that successful innovation depends on team members who can work effectively in culturally diverse environments. Yet only the technology innovators report that they view an international background as a prerequisite for a senior management role. Accordingly, only the technology innovators put significant effort into developing employees’ cross-cultural leadership skills.

The levers of choice in this regard are financial and career incentives to encourage staff to work in different geographies. In fact, few factors operate as powerfully as incentives to influence and reshape organizational culture and work practices. However, it appears that organizations need to do much more to align their incentives with their innovation strategies. Although

most respondents viewed accessing new knowledge as central to innovation success, few had deployed incentives to support it. Not surprisingly, then, low-value-added sites, such as those that do nothing but local-market customization, often struggle to retain talented staff. (This challenge is especially acute in markets like China and India.) One solution is to move these sites “up the innovation food chain” by assigning them more complex responsibilities. A site need not have full development capabilities to be an interesting place to work; it could, for example, be designated a center of excellence for a particular process or technology.

Global innovation networks are an integral piece of the emerging international economic system, but creating networks that deliver real value requires thorough, painstaking consideration. All too often, managers pursue ill-defined economic and political value when creating and expanding their innovation networks, or fail to provide the shared processes and common language the networks need to excel.

A truly lean global innovation network that operates with seamless efficiency across borders and cultures is a rare, beautiful thing. The most powerful levers — cost-effective node location, well-designed product development platforms, an innovation-friendly global culture, and a well-aligned set of incentives — are available to all companies. But companies so rarely put all of them together that creating such an effective network is undeniably a towering achievement, and a notable example of innovation in itself. +

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